Installation

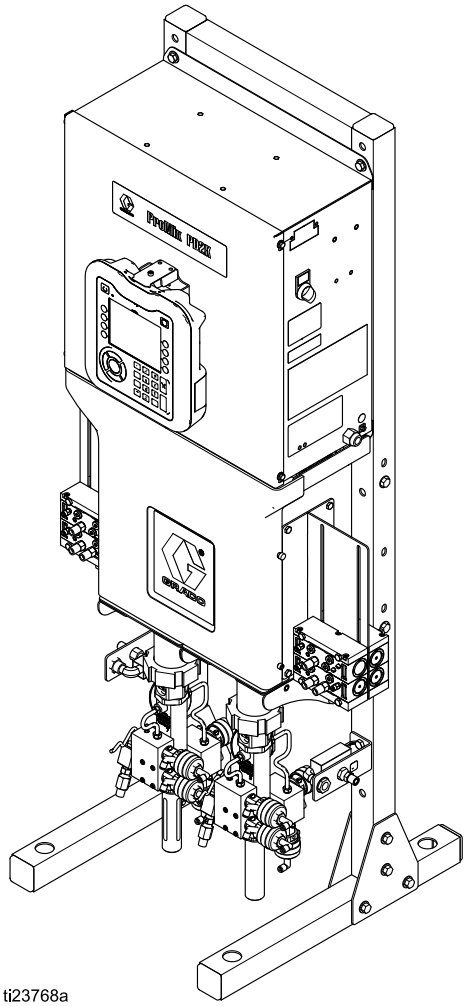
ProMix® PD2K Proportioner for Automatic Spray Applications

332458B
EN

Electronic positive displacement proportioner for fast-setting two-component materials. Automatic system with Advanced Display Module. For professional use only.

Important Safety Instructions
Read all warnings and instructions in this manual and in your operation, repair, and associated component manuals.
Save these instructions.

See page 3 for model part numbers and approvals information.



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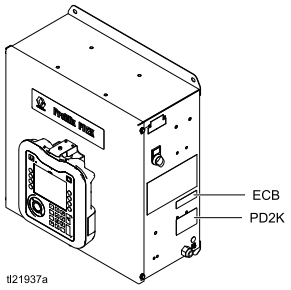
Related Manuals

Current manuals are available at www.graco.com.

Manual No.	Description
332709	PD2K Proportioner Repair-Parts Manual, Automatic Systems
332564	PD2K Proportioner Operation Manual, Automatic Systems
332339	Pump Repair-Parts Manual
332454	Color Change Valve Repair-Parts Manual
333282	Color Change Kits Instructions-Parts Manual
332456	3rd and 4th Pump Kits Instructions-Parts Manual

Models

See Figs. 1–7 for component identification labels, including approval information and certification.

Part No.	Series	Maximum Air Working Pressure	Maximum Fluid Working Pressure	Location of PD2K and Electrical Control Box (ECB) Labels
AC1000	A	100 psi (0.7 MPa, 7.0 bar)	300 psi (2.068 MPa, 20.68 bar)	
AC2000	A	100 psi (0.7 MPa, 7.0 bar)	1500 psi (10.34 MPa, 103.4 bar)	

CE 0359 Ex II 2 G FM C US APPROVED

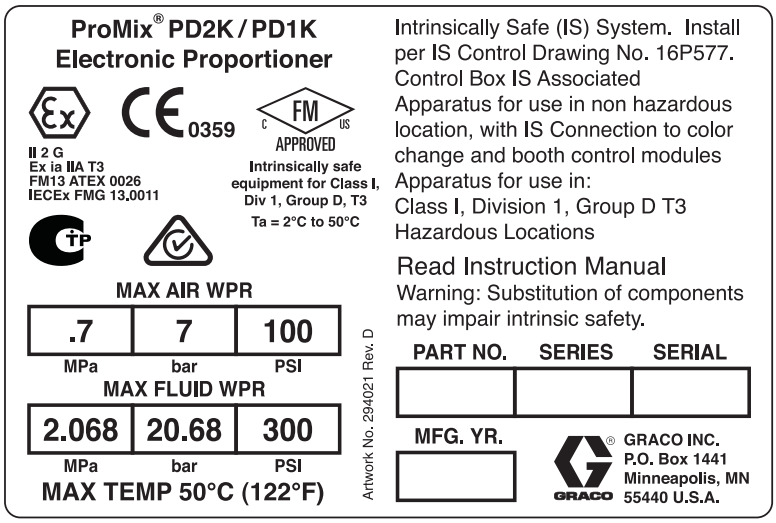

ProMix® PD2K / PD1K
Electronic Proportioner
II 2 G
Ex ia IIA T3
FM13 ATEX 0026
IECEx FMG 13.0011
0359
APPROVED
Intrinsically safe equipment for Class I, Div 1, Group D, T3
Ta = 2°C to 50°C
MAX AIR WPR
.7 7 100
MPa bar PSI
MAX FLUID WPR
2.068 20.68 300
MPa bar PSI
MAX TEMP 50°C (122°F)
Artwork No. 294021 Rev. D
Intrinsically Safe (IS) System. Install per IS Control Drawing No. 16P577.
Control Box IS Associated Apparatus for use in non hazardous location, with IS Connection to color change and booth control modules
Apparatus for use in:
Class I, Division 1, Group D T3 Hazardous Locations
Read Instruction Manual
Warning: Substitution of components may impair intrinsic safety.
PART NO. SERIES SERIAL
MFG. YR.
GRACO INC.
P.O. Box 1441
Minneapolis, MN
55440 U.S.A.

Figure 1 Model AC1000 (Low Pressure) Identification Label

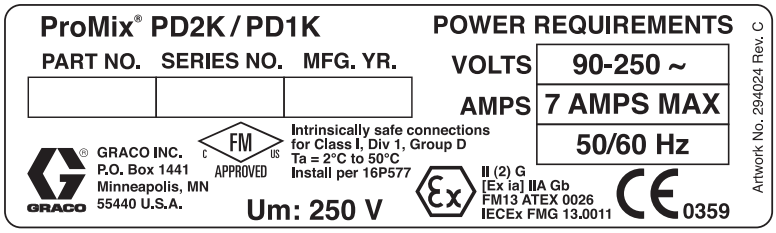


Figure 2 24M672 Control Box Identification Label

Continued on the next page.

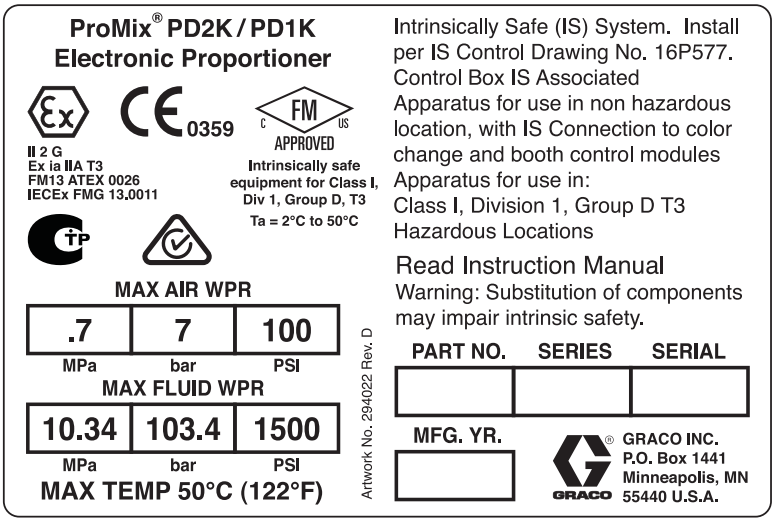


Figure 3 Model AC2000 (High Pressure) Identification Label

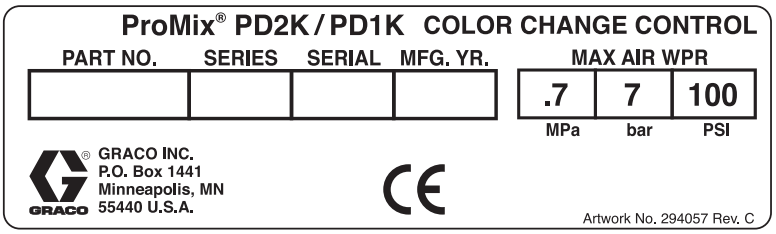


Figure 4 Non-Intrinsically Safe Color Change Control (Accessory) Identification Label

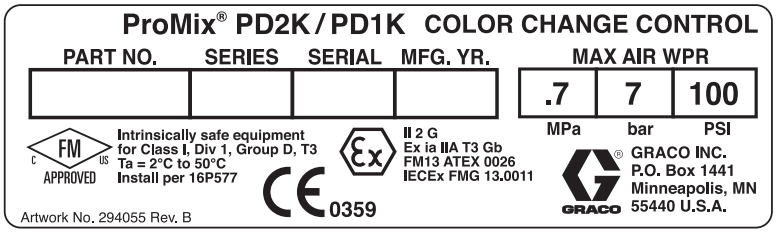


Figure 5 Intrinsically Safe Color Change Control (Accessory) Identification Label

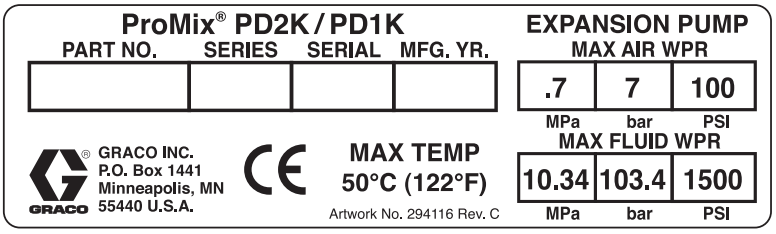


Figure 6 Pump Expansion Kit (Accessory) Identification Label

Warnings

The following warnings are for the setup, use, grounding, maintenance and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

WARNING

FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock, Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment.
- Connect only to grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

WARNING

INTRINSIC SAFETY

Intrinsically safe equipment that is installed improperly or connected to non-intrinsically safe equipment will create a hazardous condition and can cause fire, explosion, or electric shock. Follow local regulations and the following safety requirements.

- Be sure your installation complies with national, state, and local codes for the installation of electrical apparatus in a Class I, Group D, Division 1 (North America) or Class I, Zones 1 and 2 (Europe) Hazardous Location, including all of the local safety fire codes (for example, NFPA 33, NEC 500 and 516, OSHA 1910.107, etc.).
- To help prevent fire and explosion:
  - Do not install equipment approved only for a non-hazardous location in a hazardous location. See model ID label for the intrinsic safety rating of your model.
  - Do not substitute system components as this may impair intrinsic safety.
- Equipment that comes in contact with the intrinsically safe terminals must be rated for Intrinsic Safety. This includes DC voltage meters, ohmmeters, cables, and connections. Remove the unit from the hazardous area when troubleshooting.

SKIN INJECTION HAZARD

High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

TOXIC FLUID OR FUMES

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDSs to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
- Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.

WARNING

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

EQUIPMENT MISUSE HAZARD

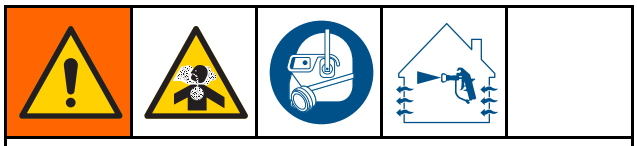
Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

Important Isocyanate (ISO) Information

Isocyanates (ISO) are catalysts used in two component materials.

Isocyanate Conditions



Spraying or dispensing materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.

Read and understand material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.

Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.

To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.

Keep Components A and B Separate

Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:

- **Never** interchange component A and component B wetted parts.
- Never use solvent on one side if it has been contaminated from the other side.

Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure; forming small, hard, abrasive crystals, which become suspended in the fluid.

Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

NOTICE

Partially cured ISO will reduce performance and the life of all wetted parts.

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere.
- Use only moisture-proof hoses compatible with ISO.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

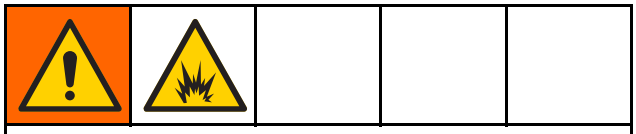
Changing Materials

NOTICE

Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the A (resin) side.

System Control Drawing 16P577



Do not substitute or modify system components as this may impair intrinsic safety. For installation, maintenance, or operation instructions, read instruction manuals. Do not install equipment approved only for non-hazardous location in a hazardous location. See the identification label for the intrinsic safety rating for your model.

NOTES FOR SYSTEM CONTROL DRAWING 16P577 (FM13ATEX0026 SYSTEM ASSEMBLY CERTIFICATE)

1	**Alternate M12 CAN Cables, for Hazardous Locations**	
	Cable Part No.	**Length ft (m)**
	16V423	2.0 (0.6)
	16V424	3.0 (1.0)
	16V425	6.0 (2.0)
	16V426	10.0 (3.0)
	16V427	15.0 (5.0)
	16V428	25.0 (8.0)
	16V429	50.0 (16.0)
	16V430	100.0 (32.0)

2. The non-intrinsically safe terminals (power rail) must not be connected to any device which uses or generates more than Um = 250 Vrms or dc unless it has been determined that the voltage has been adequately isolated.

3. The electrical enclosure ground screw must be connected to a true earth ground using the supplied ground strap (223547) or by an equivalent 10 AWG or larger isolated conductor. Resistance from the electrical enclosure ground to the true earth ground shall not exceed 1 ohm.

4. Multiple earthing of components is allowed. Intrinsically safe apparatus provides isolation from earth to 500 Vrms.

5 Do not operate system with power barrier cover removed.

6. Installation should be in accordance with ANSI/ISA RP12.06.01 “Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations” and the National Electrical Code® (ANSI/NFPA 70).

7. Installation in Canada should be in accordance with the Canadian Electrical Code, CAS C22.1, Part I, Appendix F.

8. For ATEX, install per EN 60079–14 and applicable local and national codes.

9. For IECEx install per IEC 60079–14 and applicable local and national codes.

NON-HAZARDOUS LOCATION ONLY	HAZARDOUS (CLASSIFIED) LOCATION Class 1, Div 1, Group D, T3 (USA and Canada) Class 1, Zone 1, Group IIA, T3 (ATEX and IECEx) Ta = 2°C to 50°C

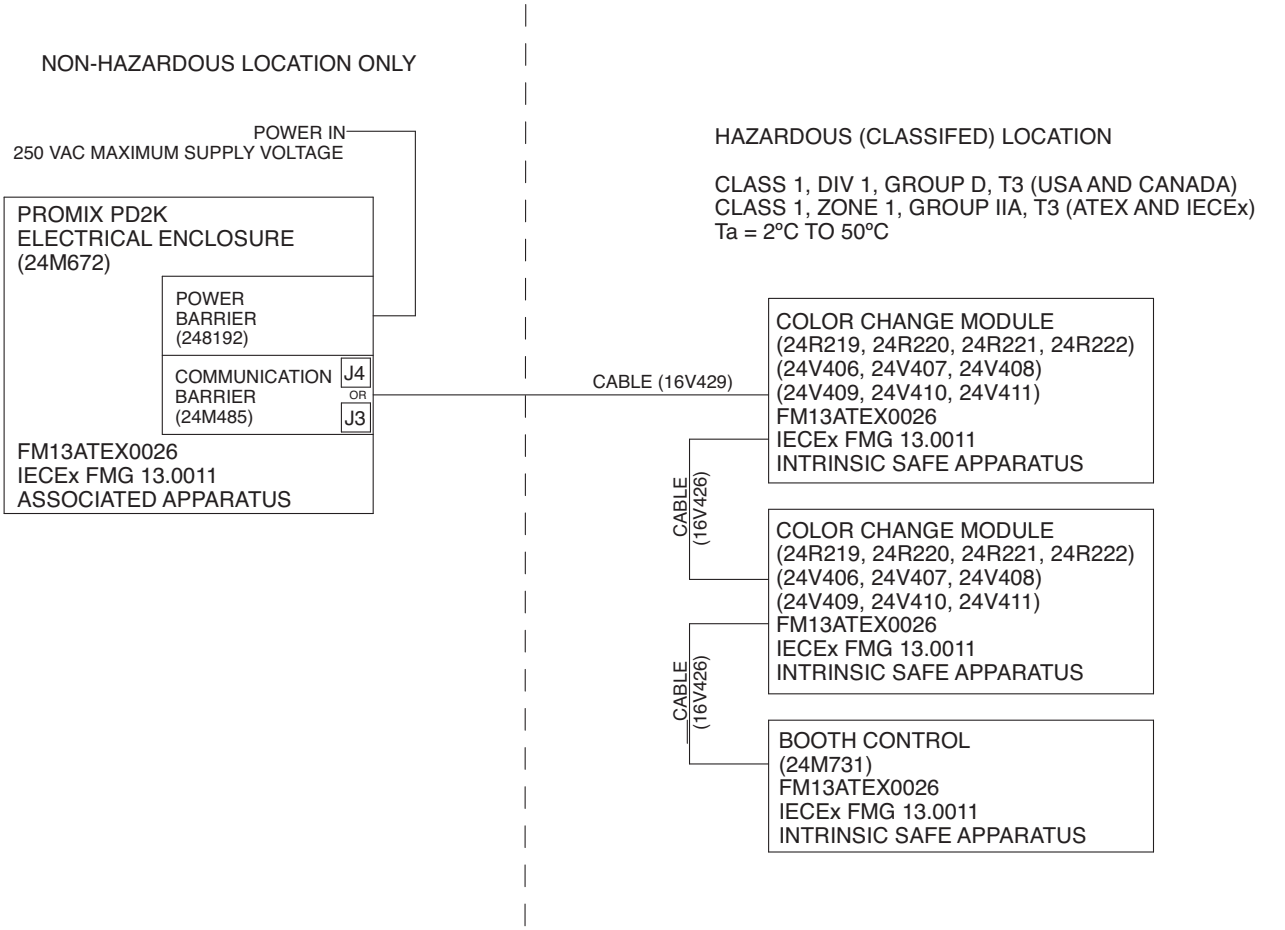


Figure 7 System Control Drawing 16P577

Configure Your System

1. Select a Base Model

Choose a PD2K base model that meets your application's requirements. See Models, page 3.

Base models include components A through F shown in the Typical Installation drawing on the next page.

Base unit components are described in the following table.

Component	Description
Fluid Pumps (A, B)	The base models include two fluid pumps, one for resin and one for catalyst. Install in the non-hazardous area.
Solvent Flow Switch (C)	Confirms solvent flow to gun during purge.
Electrical Control Box (D)	The electrical control box includes a barrier board, intrinsically safe isolation board, 24 Vdc and 48 Vdc power supplies, Enhanced Fluid Control Module, and Pump Control Modules. The Gateway communication module, shipped separately, is installed in the electrical control box. It accepts 90–250 Vac line power and converts that power to acceptable low voltage signals used by other system components. Install the electrical control box in the non-hazardous area.
Advanced Display Module (E)	The Advanced Display Module (ADM) enables the user to setup, monitor, and control the system. Install the ADM in the non-hazardous area.
CAN cable (F)	The CAN cable connects the Gateway communication module to the IS remote mix control module.

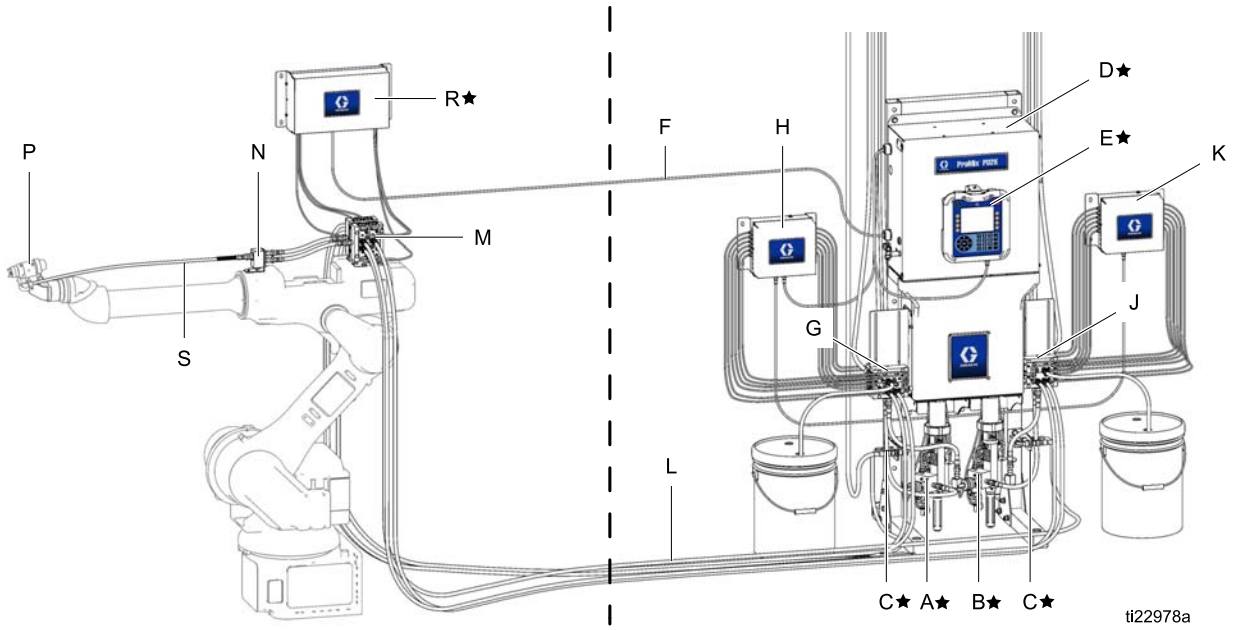


Figure 8 Typical Installation

Component	Description
★ Components A through F are included with the base unit.	
A★	Material A (Color) Pump
B★	Material B (Catalyst) Pump
C★	Solvent Flow Switch
D★	Electrical Control Box
E★	Advanced Display Module
F★	CAN Communication Cable
Components G through K are included in optional color change kits.	
G	Color Change Valves (accessory, non-hazardous area)
H	Color Change Module (accessory, non-hazardous area)
J	Catalyst Change Valves (accessory, non-hazardous area)
K	Catalyst Change Module (accessory, non-hazardous area)
Components L through S are accessories and must be ordered separately.	
L	Fluid/Air Hose Bundle (accessory)
M	Remote Color Change Manifold (accessory, hazardous area)
N	Remote Mix Manifold (accessory, hazardous area)
P	Automatic Spray Gun (accessory)
R	IS Remote Mix Control Module (accessory, hazardous area)
S	Gun Fluid Hose (accessory)
T	Supply Line Drain Valves (accessory, required, not shown)

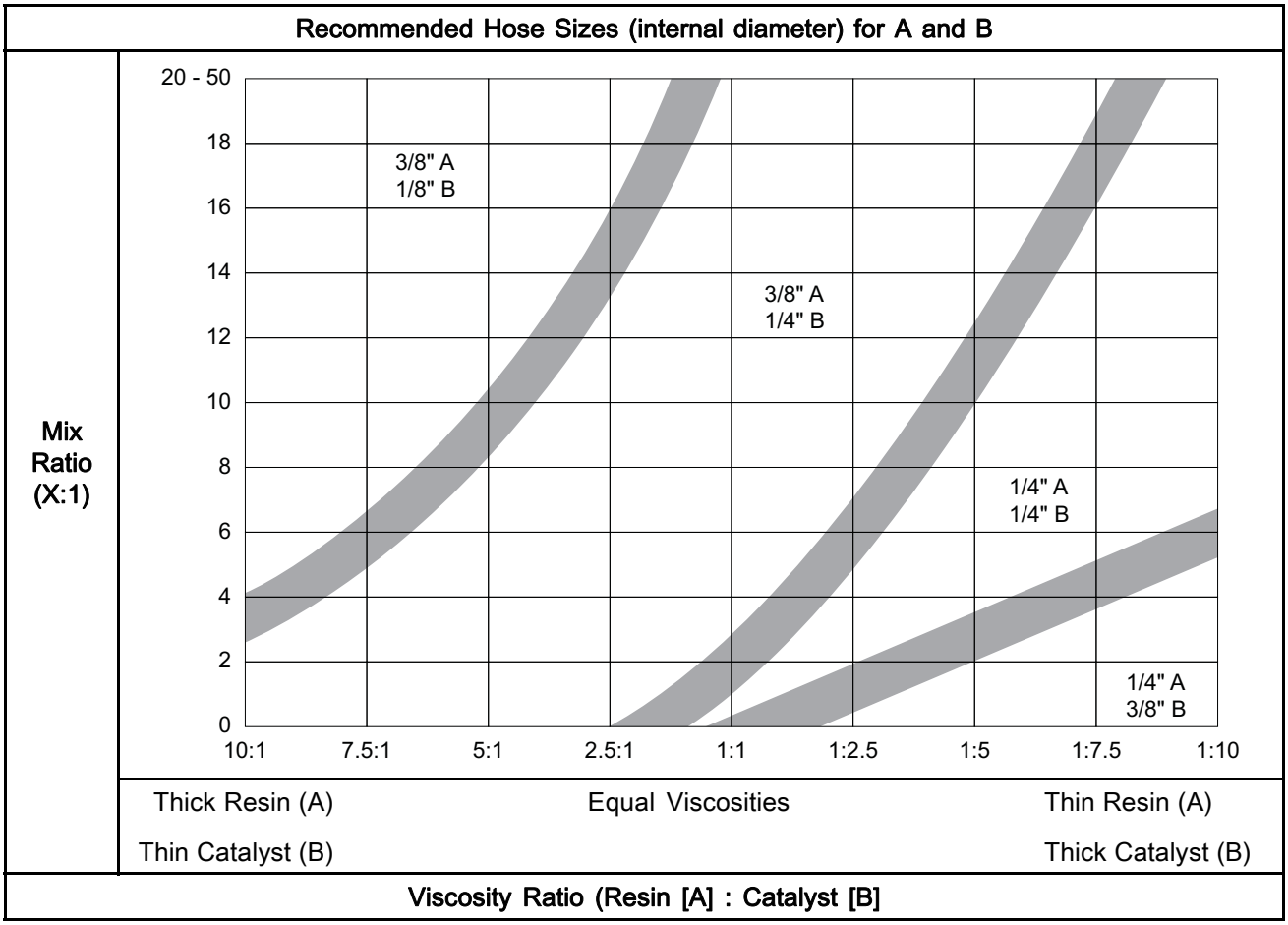
2. Select Hoses

Hose Selection Tool

Use this chart to determine the proper size hoses for your mix ratio and viscosity., then select hoses for your application.

NOTE: Always use Graco hoses.

NOTE: Shaded areas may use hose sizes from either of the two adjacent areas.



1/4 in. (6 mm) ID Hoses

Application	Material	Pressure	Maximum Fluid Working Pressure	Length		
				15 ft (4.6 m)	25 ft (7.6 m)	50 ft (15.2 m)
Catalyst	Moisture-Lok	High and Low	2000 psi (13.8 MPa, 138 bar)	947078	24T134	24T135
	Nylon	Low	225 psi (1.6 MPa, 16 bar)	17C967	24T266	24T267
		High	4100 psi (28.3 MPa, 283 bar)	238825	239107	239111
Resin	Nylon	Low	225 psi (1.6 MPa, 16 bar)	17C967	24T266	24T267
		High	4100 psi (28.3 MPa, 283 bar)	238825	239107	239111
Solvent	Nylon	Low	225 psi (1.6 MPa, 16 bar)	17C967	24T266	24T267
		High	4100 psi (28.3 MPa, 283 bar)	238825	239107	239111
Atomizing Air	Nylon	Low	225 psi (1.6 MPa, 16 bar)	17C967	24T194	24T195

3. Select a Spray Gun

Spray Guns

Select an automatic spray gun from the following table.

Application	Gun Model	Gun Manual No.	Maximum Fluid Working Pressure
Conventional Air Spray	AirPro	313516	100 psi (0.7 MPa, 7 bar)
Electrostatic Air Spray	Pro Xs	309297	100 psi (0.7 MPa, 7 bar)
Conventional Air-Assisted Spray	G40	311052	4000 psi (28 MPa, 280 bar)
Electrostatic Air-Assisted Spray	Pro Xs AA	309298	3000 psi (21 MPa, 210 bar)

4. Select Non- IS Color and Catalyst Change Kits

Using the following table, choose the non-IS color/catalyst change kits that meet your application's requirements. The kits include a manifold with valves and a control module for installation in the non-hazardous area. See color change kit manual 333282 for further information.

Table 1 . Low Pressure Color/Catalyst Change Kits (300 psi [2.068 MPa, 20.68 bar])

Kit Part No.	Kit Description
Low Pressure Non-Circulating Kits	
24R915	2 color or 2 catalyst change valves
24R916	4 color or 4 catalyst change valves
24R917	6 color change valves
24R918	8 color change valves
Low Pressure Circulating Kits	
24R919	2 color or 2 catalyst change valves
24R920	4 color or 4 catalyst change valves
24R921	6 color change valves
24R922	8 color change valves

Table 2 . High Pressure Color/Catalyst Change Kits (1500 psi [10.34 MPa, 103.4 bar])

Kit Part No.	Kit Description
High Pressure Non-Circulating Kits	
24R959	2 color or 2 catalyst change valves
24R960	4 color or 4 catalyst change valves
24R961	6 color change valves
24R962	8 color change valves
High Pressure Acid-Compatible Non-Circulating Kits	
24T579	2 catalyst change valves
24T580	4 catalyst change valves
High Pressure Circulating Kits	
24R963	2 color or 2 catalyst change valves
24R964	4 color or 4 catalyst change valves
24R965	6 color change valves
24R966	8 color change valves

5. Select IS Remote Color Change Kits

IS remote color change manifold kits include a manifold with valves and a control module, which may be installed in the hazardous area. The remote color change manifold kit must have the same number of color valves and catalyst valves as the color/catalyst change kit you selected in the previous step. The remote color change manifolds attach to the robot arm or wall, allowing mixing to occur close to the point of spray. See color change kit manual 333282 for further information.

Table 3 . Low Pressure, Non-Circulating Remote Color Change Manifold Kits (300 psi [2.068 MPa, 20.68 bar])

Number of Color + Solvent Valves	Number of Catalyst + Solvent Valves		
	1	2	4
1	24V157		
2	24V158	24V331	
4	24V159	24V332	24V343
6	24V160	24V333	24V344
8	24V161	24V334	24V345
12	24V162	24V335	24V346
13–18	24V163		
13–24	24V164		
13–30	24V165		

Table 4 . Low Pressure, Circulating Remote Color Change Manifold Kits (300 psi [2.068 MPa, 20.68 bar])

Number of Color + Solvent Valves	Number of Catalyst + Solvent Valves		
	1	2	4
1	24V166		
2	24V167	24V336	
4	24V308	24V337	24V347
6	24V309	24V338	24V348
8	24V326	24V339	24V349
12	24V327	24V340	24V350
13–18	24V328		
13–24	24V329		
13–30	24V330		

Table 5 . High-Pressure, Non-Circulating Remote Color Change Manifold Kits (1500 psi [10.34 MPa, 103.4 bar])

Number of Color + Solvent Valves	Number of Catalyst + Solvent Valves		
	1	2	4
1	24V359		
2	24V360	24V381	
4	24V361	24V382	24V396
6	24V362	24V383	24V397
8	24V363	24V384	24V398
12	24V364	24V385	24V399
13–18	24V365		
13–24	24V366		
13–30	24V367		

Table 6 . High-Pressure, Circulating Remote Color Change Manifold Kits (1500 psi [10.34 MPa, 103.4 bar])

Number of Color + Solvent Valves	Number of Catalyst + Solvent Valves		
	1	2	4
1	24V369		
2	24V370	24V389	
4	24V371	24V390	24V402
6	24V372	24V391	24V403
8	24V373	24V392	24V404
12	24V374	24V393	24V405
13–18	24V375		
13–24	24V376		
13–30	24V377		

6. Select Pump Expansion Kits

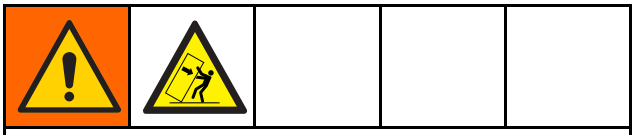
The following table lists available kits to add a third or fourth pump to your system. Each kit includes one pump, a pump control module, solenoid, frame, mounting bracket, and cabling. See pump expansion kit manual 332456 for further information.

Kit Part No.	Kit Description
Low Pressure Pumps (300 psi [2.068 MPa, 20.68 bar])	
24R968	Low pressure resin 70cc pump
24R970	Low pressure catalyst 35cc pump
High Pressure Pumps (1500 psi [10.34 MPa, 103.4 bar])	
24R969	High pressure resin 70cc pump
24R971	High pressure catalyst 35cc pump

General Information

- Reference numbers and letters in parentheses in the text refer to numbers and letters in the illustrations.
- Be sure all accessories are adequately sized and pressure-rated to meet system requirements.
- To protect the screens from paints and solvents, clear-plastic protective shields (10 per pack) are available. Order Part No. 197902 for the Advanced Display Module. Clean the screens with a dry cloth if necessary.

Location



To prevent tipping which can cause serious injury and equipment damage, the mounting stand must be securely anchored to the floor or to an appropriate base. The stand is not intended for free-standing use or wall mounting.

Mounting the PD2K Base Unit:

- Mount the PD2K in a non-hazardous location.
- Ensure that the mounting surface and mounting hardware are strong enough to support the weight of the equipment, fluid, hoses, and stress caused during operation.
- Do not mount to a wall.
- Secure the stand to the floor with 1/2 in. (13 mm) bolts which engage at least 6 in. (152 mm) into the floor to prevent the unit from tipping. See Dimensions, page 36.
- There must be sufficient space on all sides of the equipment for installation, operator access, maintenance, and air circulation. The fans at the back of the unit require a minimum of 6 in. (152 mm) clearance from the closest surface to ensure adequate air circulation.

Install the Display Module

1. Use the screws (11) to mount the bracket (10) for the Advanced Display Module (12) on the front of the Control Box or on the wall.
2. Snap the Advanced Display Module into the bracket.

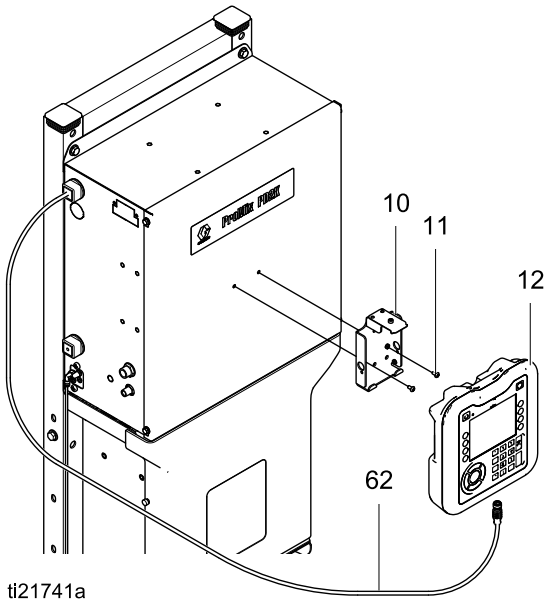


Figure 9 Install Display Module

3. Connect one end of the 5 ft (1.5 m) CAN cable (provided) to the Advanced Display Module (M). The other end of the cable comes from the factory connected to the Enhanced Fluid Control Module (EFCM).

NOTE: For a list of alternate cable lengths, see Electrical Schematics, page 29. The total length of all cable used in the system must not exceed 150 ft (45 m).

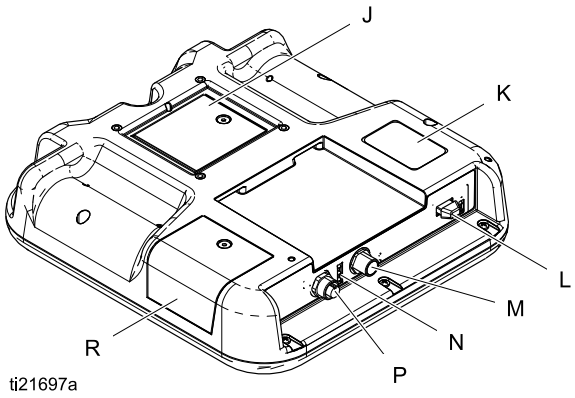


Figure 10 Advanced Display Module Connection Ports

Item	Description
J	Battery Cover
K	Model Number
L	USB Drive Interface
M	CAN Cable Connection
N	ADM Status LEDs
P	Accessory Cable Connection
R	Token Access Cover

Air Supply

Air Requirements

- **Compressed air supply pressure:** 85-100 psi (0.6–0.7 MPa, 6.0-7.0 bar).
- **Air hoses:** use grounded hoses that are correctly sized for your system.
- **Air regulator and bleed-type shutoff valve:** include in each air line to fluid supply equipment. Install an additional shutoff valve upstream of all air line accessories to isolate them for servicing.

Trapped air can cause a pump or dispense valve to cycle unexpectedly, which could result in serious injury from splashing or moving parts. Use bleed-type shutoff valves.

To reduce the risk of fire and explosion if using a Graco electrostatic gun, a shutoff valve must be installed in the gun air line to shutoff the atomizing and turbine air to the gun. Contact your Graco distributor for information on air shutoff valves for electrostatic applications.

- **Air line filter:** to filter oil and water out of the air supply and help avoid paint contamination and clogged solenoids. See Technical Data, page 37, for air filtration requirements.

Air Connections

1. Tighten all system air and fluid line connections as they may have loosened during shipment.
2. Connect the main air supply line to the main air inlet (136). This air line supplies the solenoids, valves, and pumps. Do not use this line to supply the gun's atomizing air.
3. Connect a **separate, dedicated,** clean air supply line to the air inlet (159a) of the air flow switch. This air supplies gun atomizing air. The air flow switch detects air flow to the gun and signals the controller when the gun is being triggered.

NOTE: If there is more than one gun (for example, a separate gun for each color), the atomizing air outlet (159c) must be branched to each gun. For ease of maintenance, install a ball valve at all air line tees.

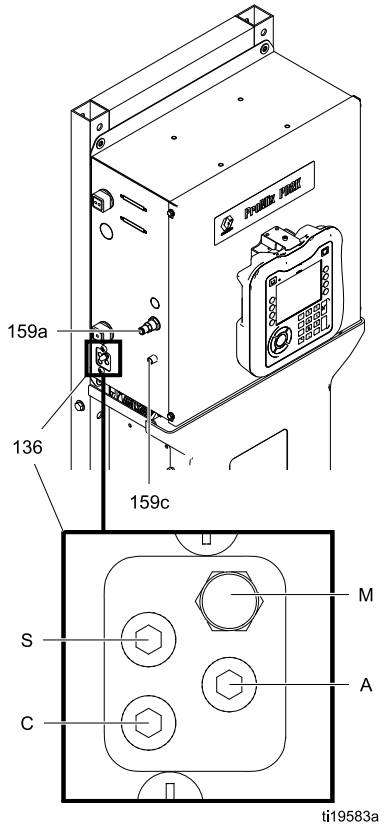


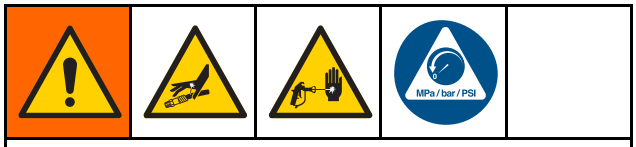
Figure 11 Atomizing Air and Air Manifold Connections

Key

Connection	Description
A	Air inlet
C	Air cutoff output (plugged)
M	Exhaust muffler
S	Solvent cutoff output (plugged)

Fluid Supply

Fluid Requirements



- To reduce the risk of equipment overpressurization and rupture which can cause injury, including skin injection, do not exceed the pressure rating of the lowest rated system component. See the identification label for the maximum working pressure of the equipment.
- To reduce the risk of injury, including skin injection, you must install a shutoff valve between each fluid supply line and the mix manifold. Use the valves to shut off fluid during maintenance and service.

Models are available to operate air spray (300 psi) or air-assisted (1500 psi) systems with a capacity of up to 800 cc/minute (depending on material viscosity).

- Fluid supply pressure tanks, feed pumps, or circulating systems can be used to supply fluid to the system.
- Materials can be transferred from their original containers or from a central paint recirculating line.
- Install a 100 mesh (minimum) fluid filter in the fluid supply line, with a drain valve.
- The supply line should be sized to avoid pressure loss of greater than a few psi between the circulation header and the proportioner fluid inlet port.

NOTE: The fluid supply must be free of pressure spikes, which are commonly caused by pump stroke changeover. Read the supply pressure on the gauge (P, see figure on next page). Supply capability for each pump must be at least 2 times the maximum operating flow rate. Supply pressure must be as close as possible to the pressure setpoint:

- For low pressure systems, ± 100 psi (0.7 MPa, 7 bar) of setpoint.

  NOTE: For low pressure systems, the pressure should be maintained at 1/2 to 2/3 of the system operating pressure.
- For high pressure systems, ± 300 psi (2.1 MPa, 21 bar) of setpoint.

If necessary, install pressure regulators or a surge tank on the pump fluid inlet lines to reduce pulsation. Contact your Graco distributor for additional information.

Single Color Connections

NOTE: Check valves (J, L) are provided on the inlet (K) and outlet (H) manifolds of each pump.

1. Connect the color supply line to the pump fluid inlet fitting (S).
2. Connect the color outlet line to the pump fluid outlet fitting (R).
3. Make the same connections on the catalyst side.

NOTE: For isocyanate catalyst materials, moisture resistant hose is required to supply fluid to the system and also as a fluid line between the pump and the mix manifold.

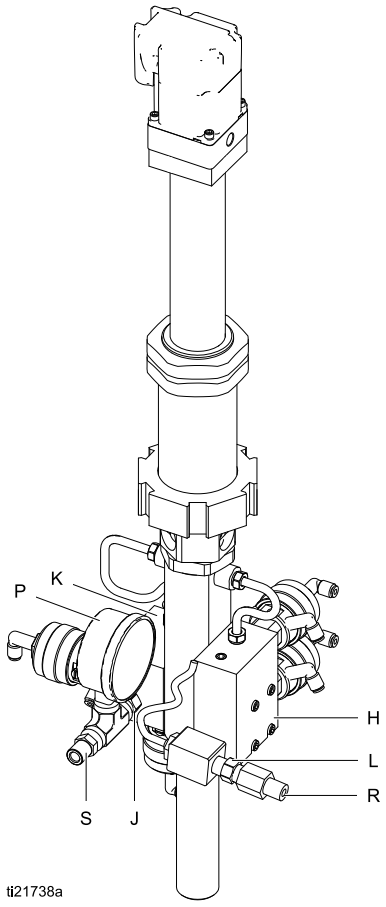


Figure 12 Pump Inlet and Outlet Connections

Color Change Connections

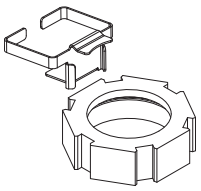
If you are installing the color change accessory kit, make the fluid connections as described in manual 333282.

TSL Cup Kit

Throat Seal Liquid (TSL) lubricates the pump throat packings and dosing valves. The PD2K Proportioner includes two TSL Cup Kits, one for each pump. The kits supply TSL to the upper throat cartridge of the color (70 cc) pump, to the upper and lower throat cartridges of the catalyst (35 cc) pump, and to the four pump dosing valves.

NOTE: TSL must be ordered separately. Order Part No. 206995, 1 quart (0.95 liter).

1. Slide the kit mounting bracket (73a) onto any side of the pump's hex nut.



2. Place the TSL cup (73) into the bracket (73a). Routing of the throat seal tubing (73c) should **always** slope up to the reservoir.

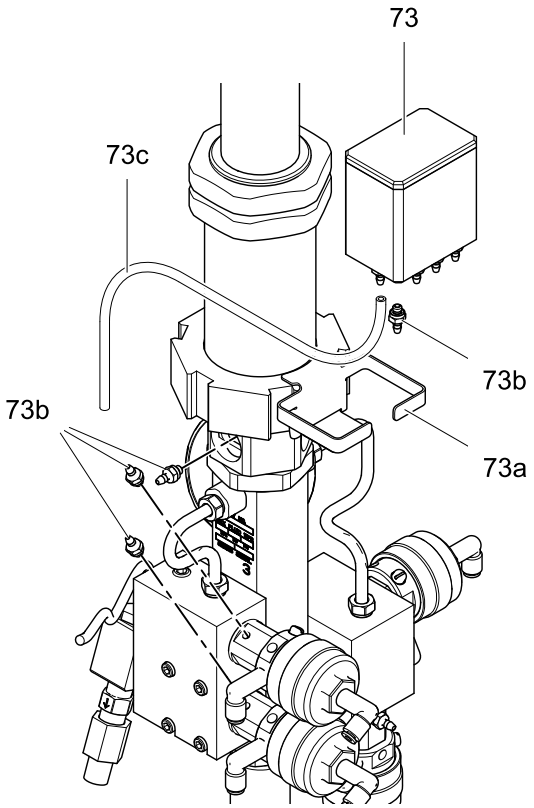
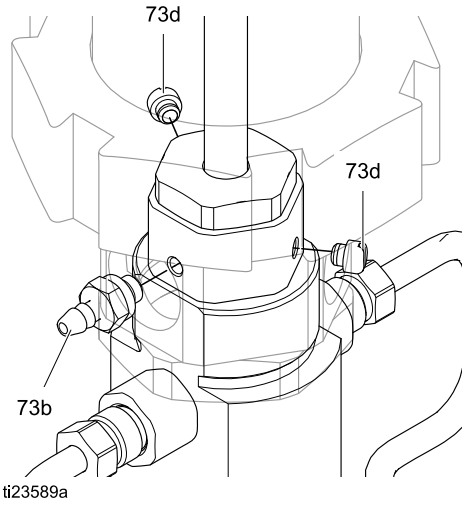


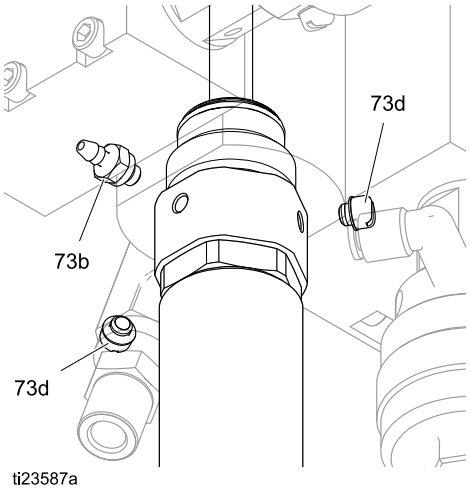
Figure 13 Install TSL Cup Kit

NOTE: The pump's upper throat cartridge has three ports (two are plugged). Move a plug (73d) if necessary so the barbed fitting (73b) can be put in the port closest to the TSL cup.

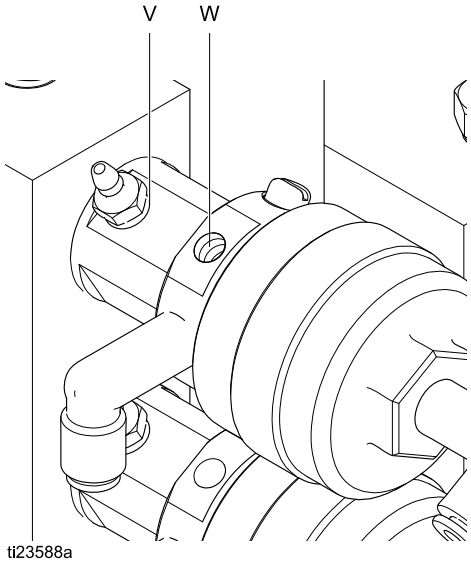
3. Check that the o-ring is in place on the barbed fitting (73b). Apply low strength thread adhesive and install the fitting in the upper throat cartridge port. Be sure the other two ports are plugged (73d).



4. **Catalyst (35 cc) pumps:** Repeat for the lower throat cartridge.



5. If you are lubricating the dosing valves, remove the plug (73d) and gasket from the valve port (V) closest to the TSL cup. Check that the o-ring is in place on the barbed fitting (73b). Apply low strength thread adhesive and install the fitting in the valve port (V). **NOTE:** Do not confuse the valve port (V) with the air port (W).



   NOTE: If you are not lubricating the dosing valves, remove the unused barbed fittings (73b) from the bottom of the TSL cup (73). Apply low strength thread adhesive and install the plugs and gaskets supplied with the kit.

6. Cut the tubing (73c) to length as required. Connect the TSL cup fittings to the fittings on the pump and valves. TSL is gravity-fed from the cup to the pump and valves; position the fittings and tubing to prevent kinks and enable the TSL to flow freely.

7. Fill the cup with TSL.

   NOTE: If TSL leaks from the rod guard of the color (70 cc) pump, be sure the lower u-cup seal is installed in the lower throat cartridge.

Solvent Meter Accessory

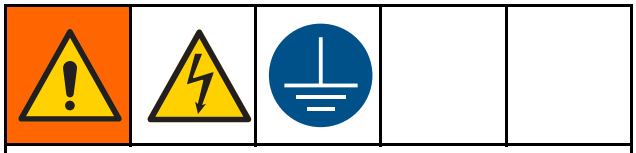
To install Solvent Meter Kit 280555, see manual 308778.

NOTE: Install the solvent meter downstream of the solvent cutoff switch near the base unit.

Light Tower Accessory

To install Light Tower Kit 24K337, see manual 3A1906.

Electrical Supply



Improper wiring may cause electric shock or other serious injury if work is not performed properly. All electrical wiring must be completed by a qualified electrician and comply with all local codes and regulations.

Electrical Requirements

Enclose all cables routed in the spray booth and high traffic areas in conduit to prevent damage from paint, solvent, and traffic.

The unit operates with 90-250 VAC, 50/60 Hz input power, with a maximum of 7 A current draw. The power supply circuit must be protected with a 15 A maximum circuit breaker.

- A power supply cord compatible to your local power configuration is not included. Wire gauge size must be 8-14 AWG.
- The input power access port is 22.4 mm (0.88 in.) in diameter. A strain relief is provided which accepts a cord diameter of 0.157–0.354 in. (4–9 mm). If another cord size is used, a user-supplied, appropriate size strain relief must be installed.

Electrical Connections

See Electrical Schematics, page 29.

1. Verify that electrical power at the main panel is shut off. Open the Control Box cover.
2. Thread the electrical cord wires through the strain relief (S).
3. Connect the wires (L, N, G) securely to the corresponding terminals of the terminal block (T), as shown.
4. Tighten the strain relief nut securely.
5. Close the Control Box. Restore power.
6. Follow instructions in Grounding, page 26.

Wire Key

Wire	Description
L	Line Power
N	Neutral
G	Ground

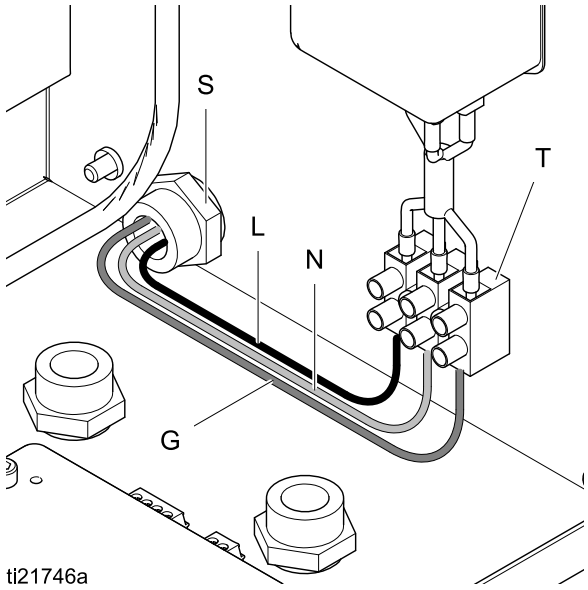
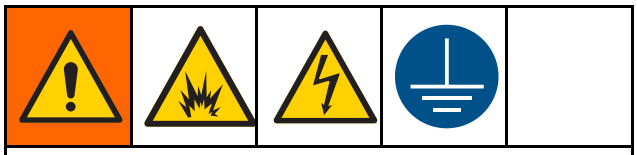


Figure 14 Control Box Electrical Connection

Grounding

See illustration on next page.



This equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.

Electrical Control Box

The electrical control box has two ground points. Both connections must be made.

- Connect the ground wire (Y) to the ground screw on the electrical control box. Connect the clamp end to a true earth ground.
- The power supply must be grounded according to local codes. Connect the power supply ground wire to the Ground terminal in the electrical control box. See Electrical Connections, page 25.

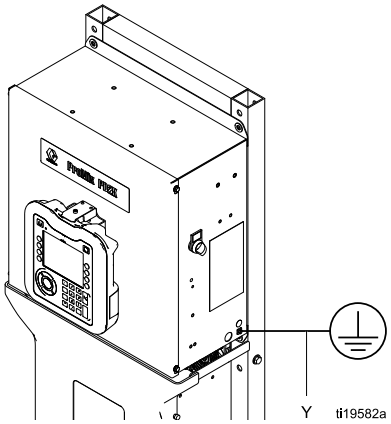


Figure 15 Ground Screw and Power Switch

Fluid Supply Container

Follow local code.

Color Change Module

Connect a ground wire from the color change module to a true earth ground.

Intrinsically safe color change modules located in the hazardous area must be connected to a true earth ground in the hazardous area.

Feed Pumps or Pressure Pots

Connect a ground wire and clamp from a true earth ground to the pumps or pots. See pump or pressure pot manual.

Air and Fluid Hoses

Use grounded hoses only.

Spray Gun

Follow the grounding instructions in your gun manual.

- **Non-Electrostatic:** Ground the spray gun through connection to a Graco-approved grounded fluid supply hose.
- **Electrostatic:** Ground the spray gun through connection to a Graco-approved grounded air supply hose. Connect the air hose ground wire to a true earth ground.

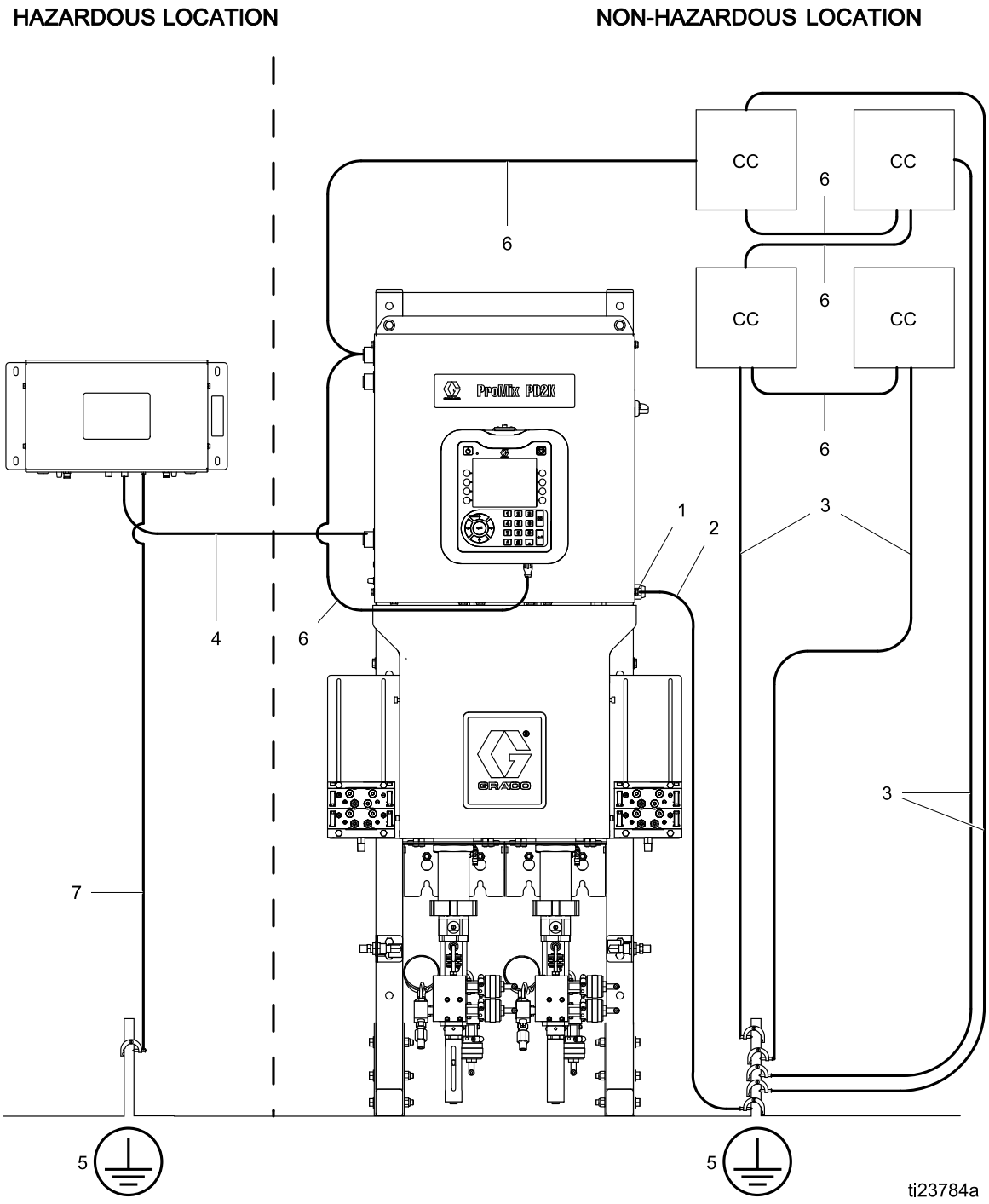


Figure 16 System Grounding

Key

1	Electrical Control Box ground screw
2	Electrical Control Box ground wire
3	Color Change Module (CC) ground wires
4	Intrinsically Safe (IS) cable

5	True Earth Ground; check local code for requirements
6	Non-Intrinsically Safe cable
7	Remote Mix Control Module ground wire

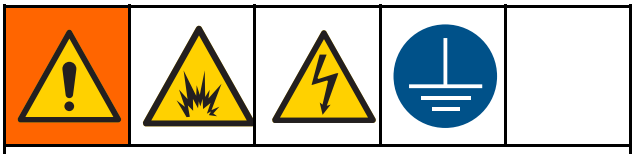
Object Being Sprayed

Follow local code.

Solvent Reservoir or Purge Station

Follow local code. Use only a conductive solvent reservoir or purge station placed on a grounded surface. Do not place the solvent reservoir or purge station on a nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.

Check Resistance



To ensure proper grounding and reduce risk of fire and explosion, resistance between components and true earth ground **must** be less than 1 ohm.

Electrical Schematics

NOTE: The electrical schematic illustrates all possible wiring expansions in a ProMix PD2K system. Some components shown are not included with all systems.
NOTE: See Optional Cables and Modules, page 35 for a list of cable options.

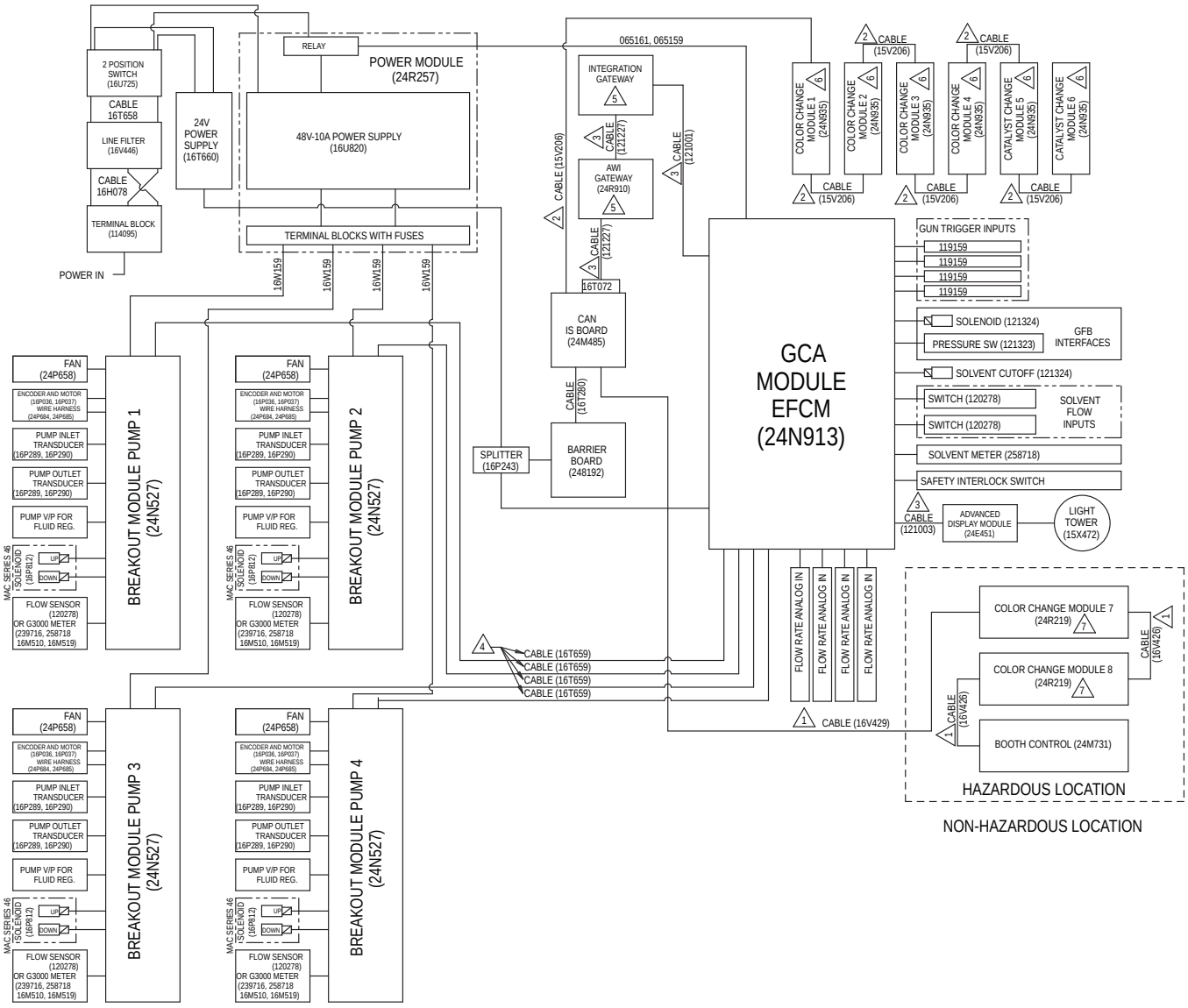


Figure 17 Electrical Schematic, Sheet 1

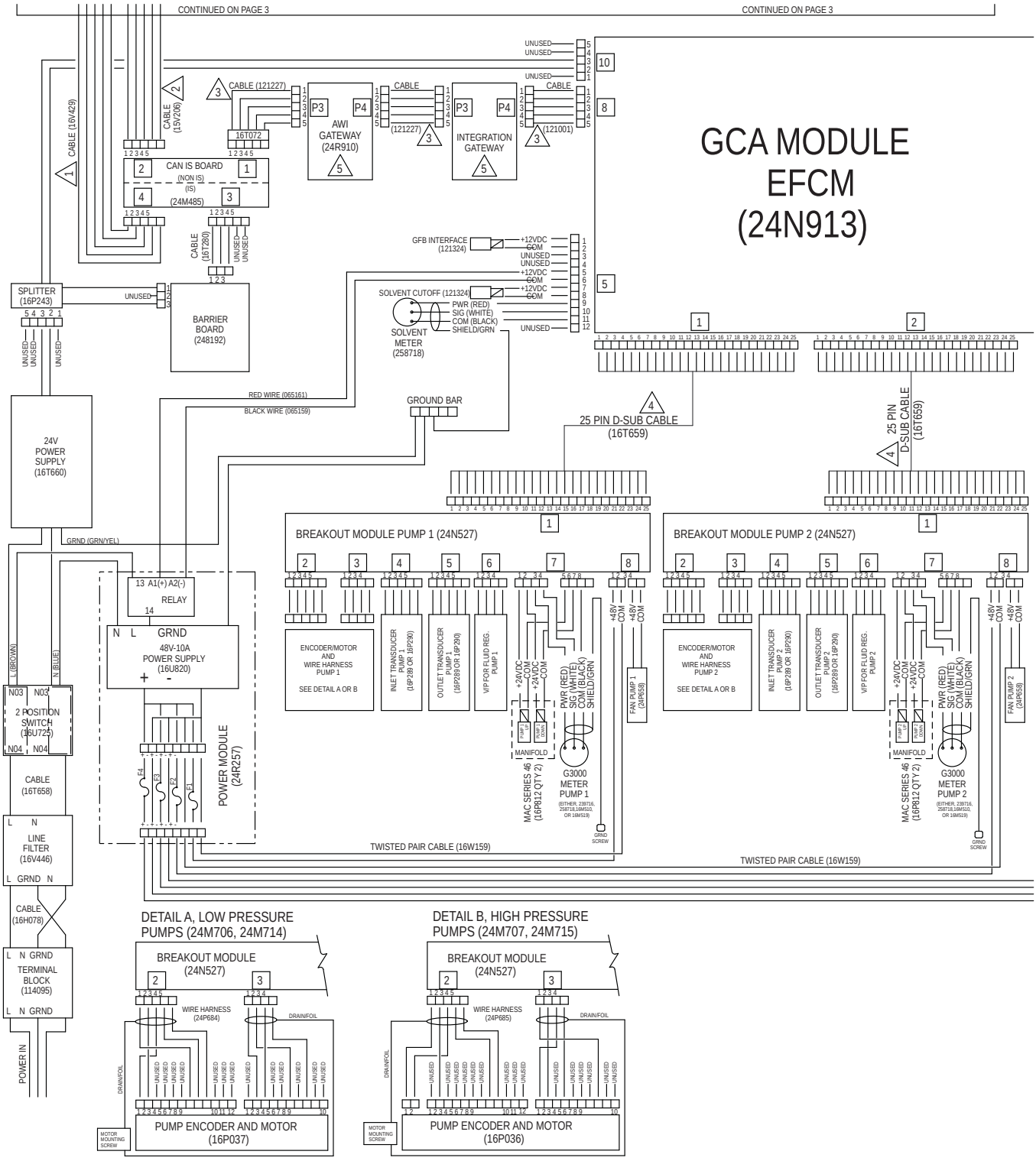


Figure 18 Electrical Schematic, Sheet 2, Part 1

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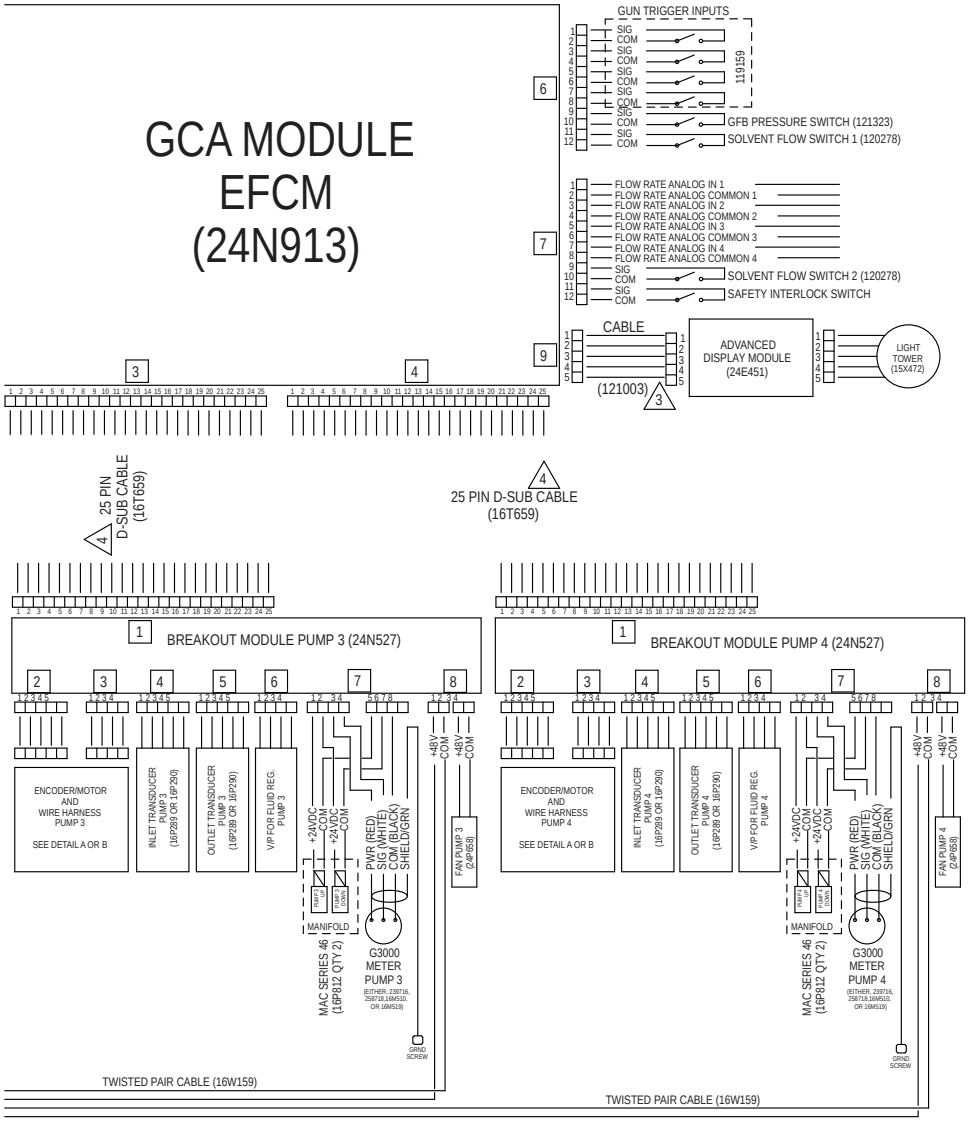

Figure 19 Electrical Schematic, Sheet 2, Part 2

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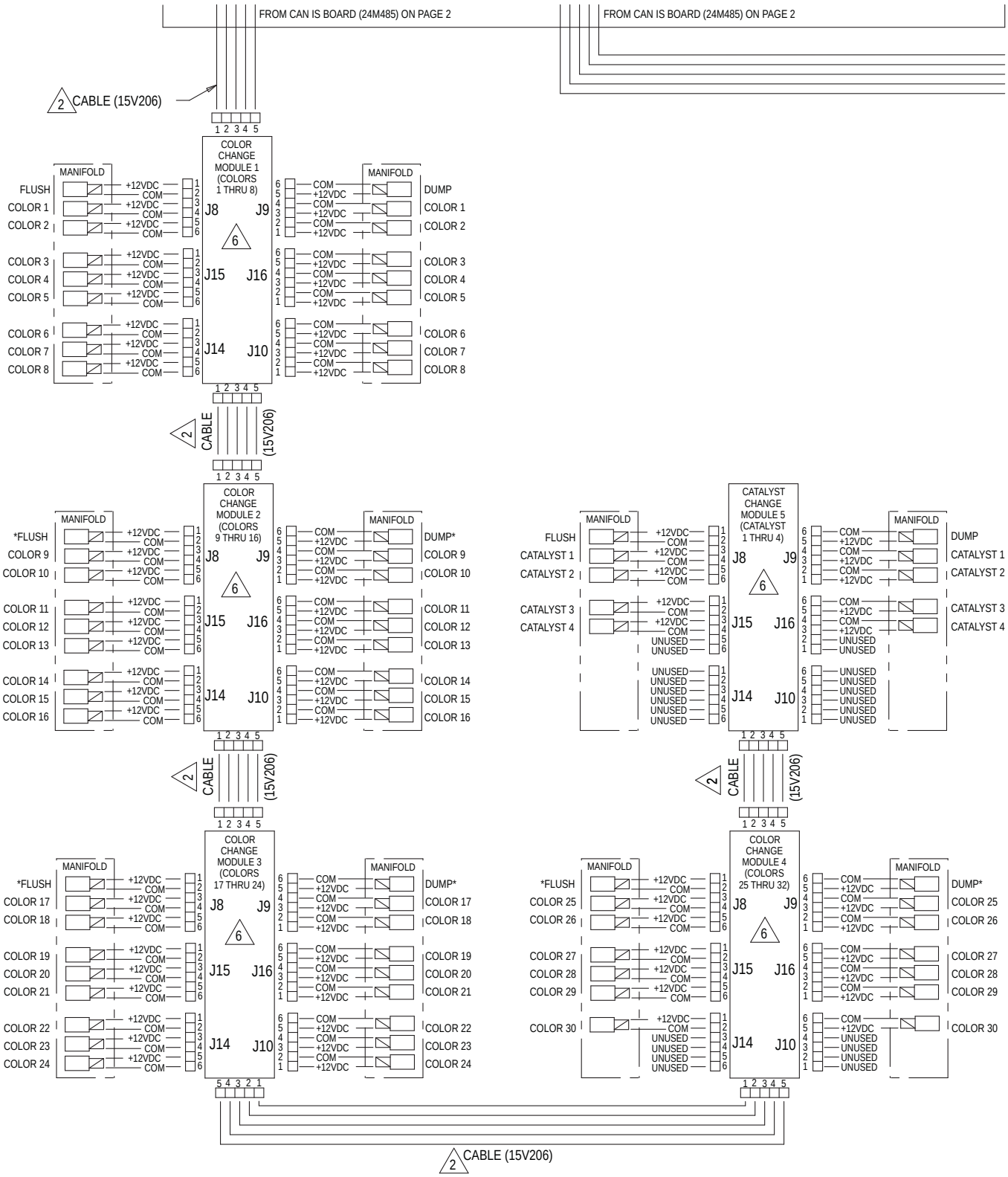

Figure 20 Electrical Schematic, Sheet 3

* May be unused in some configurations.

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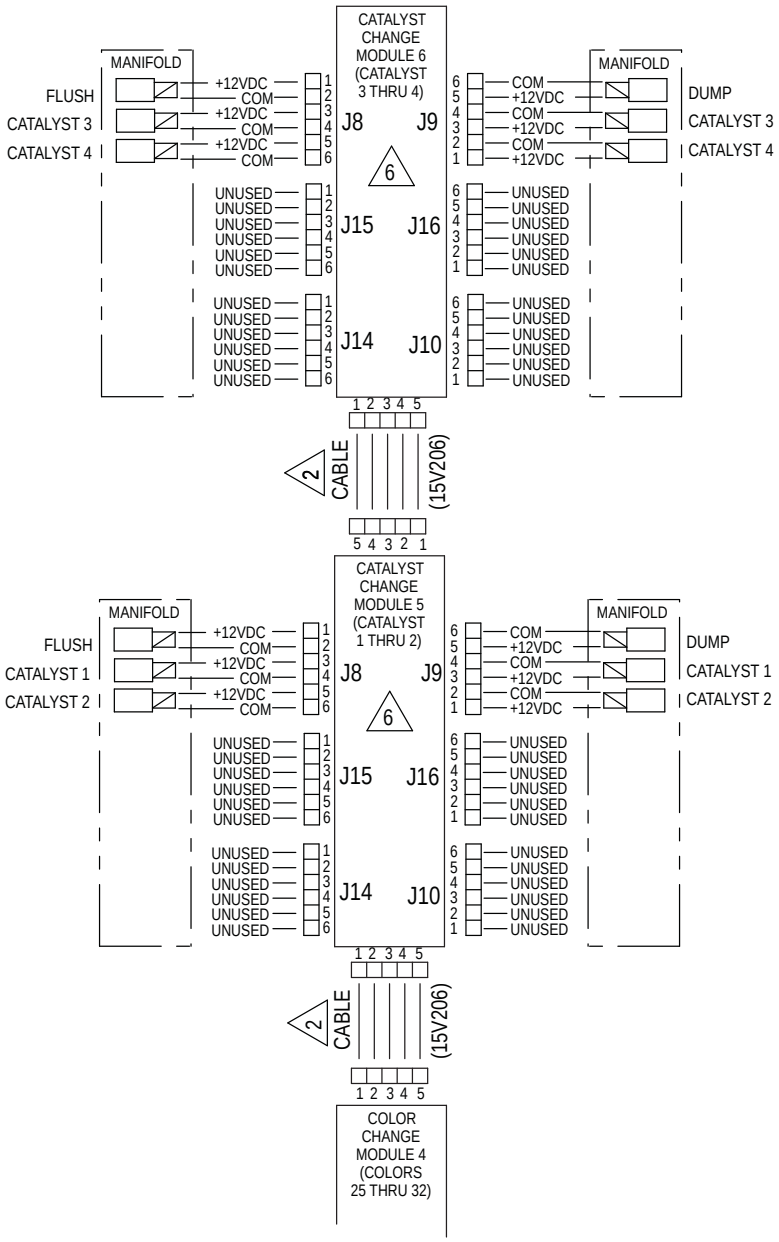

Figure 21 Electrical Schematic, Sheet 3, Alternate Configuration for Catalyst Change Control

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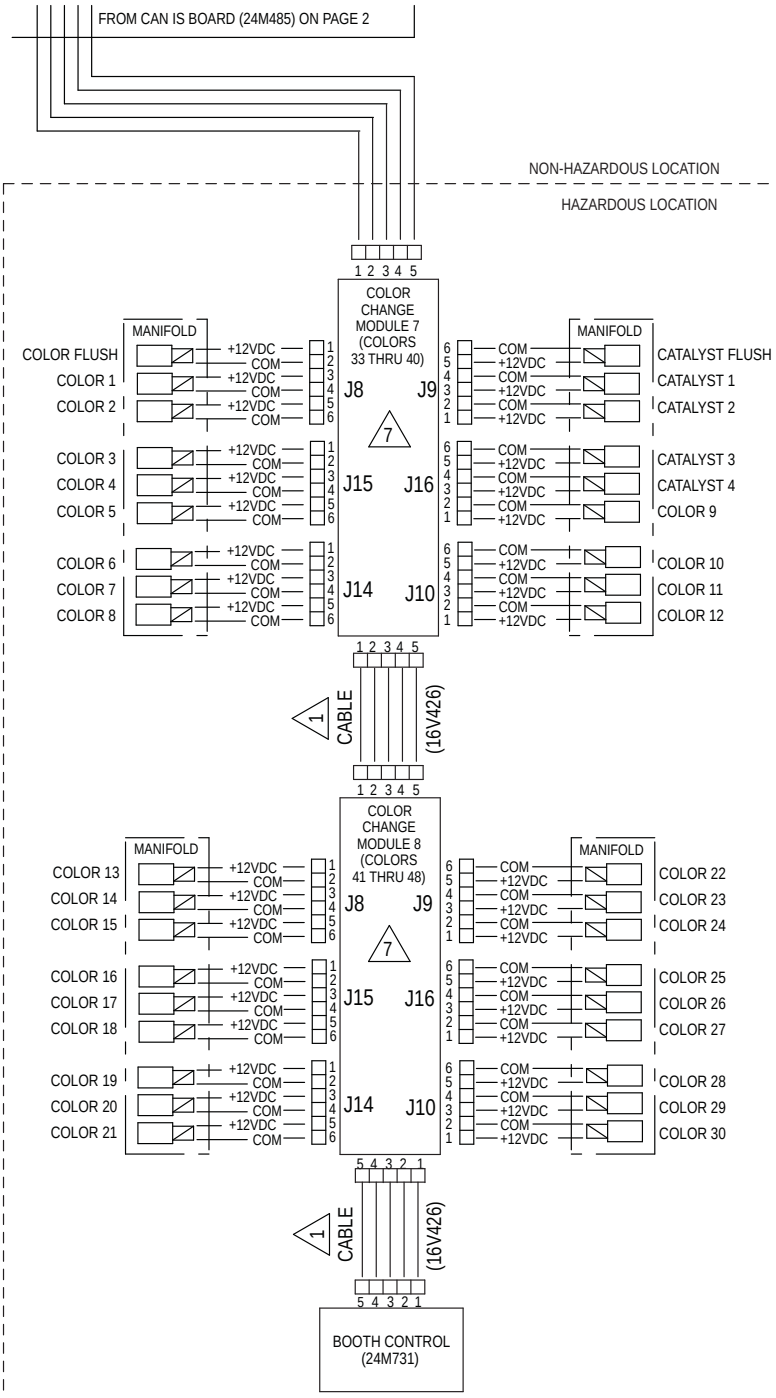

Figure 22 Electrical Schematic, Sheet 3, Hazardous Location

Optional Cables and Modules

NOTE: The total length of all cable used in the system must not exceed 150 ft (45 m). See the Electrical Schematics, page 29.

1 M12 CAN Cables, for Hazardous Locations **NOTE:** The total length of cable used in the hazardous location must not exceed 120 ft (36 m).	
Cable Part No.	**Length ft (m)**
16V423	2.0 (0.6)
16V424	3.0 (1.0)
16V425	6.0 (2.0)
16V426	10.0 (3.0)
16V427	15.0 (5.0)
16V428	25.0 (8.0)
16V429	50.0 (16.0)
16V430	100.0 (32.0)

2 M12 CAN Cables, for Non-Hazardous Locations Only	
15U531	2.0 (0.6)
15U532	3.0 (1.0)
15V205	6.0 (2.0)
15V206	10.0 (3.0)
15V207	15.0 (5.0)
15V208	25.0 (8.0)
15U533	50.0 (16.0)
15V213	100.0 (32.0)

3 CAN Cables, for Non-Hazardous Locations Only	
Cable Part No.	**Length ft (m)**
125306	1.0 (0.3)
123422	1.3 (0.4)
121000	1.6 (0.5)
121227	2.0 (0.6)
121001	3.0 (1.0)
121002	5.0 (1.5)
121003	10.0 (3.0)
120952	13.0 (4.0)
121201	20.0 (6.0)
121004	25.0 (8.0)
121228	50.0 (15.0)

4 25 Pin D-SUB Cables, for Non-Hazardous Locations Only	
16T659	2.5 (0.8)
16V659	6.0 (1.8)

5 Alternates for Communication Module 24R910, for Non-Hazardous Locations Only	
Module Part No.	**Module Part No.**
CGMDN0*, DeviceNet	CGMPB0*, Profibus
CGMEP0*, Ethernet IP	CGMPN0*, Profinet
* You must purchase Map Token Kit 17C087 for use with these kits.	

6 Alternates for Color Change Modules by Part Number (Factory Configuration), for Non-Hazardous Locations Only	
Module Part No.	**Description**
24T557	2 color/2 catalyst
24T558	4 color/4 catalyst
24T559	6 color/6 catalyst
24T560	8 color/8 catalyst

7 Alternates for Color Change Modules by Part Number (Factory Configuration), for Hazardous Locations Only	
24T571	2 color/2 catalyst
24T572	4 color/2 catalyst
24T573	6 color/2 catalyst
24T574	8 color/2 catalyst, 13–24 color
24T774	12 color/2 catalyst
24T775	4 color/4 catalyst
24T776	6 color/4 catalyst
24T777	8 color/4 catalyst
24T778	12 color/4 catalyst, 13–30 color
24T779	13–18 color

Dimensions

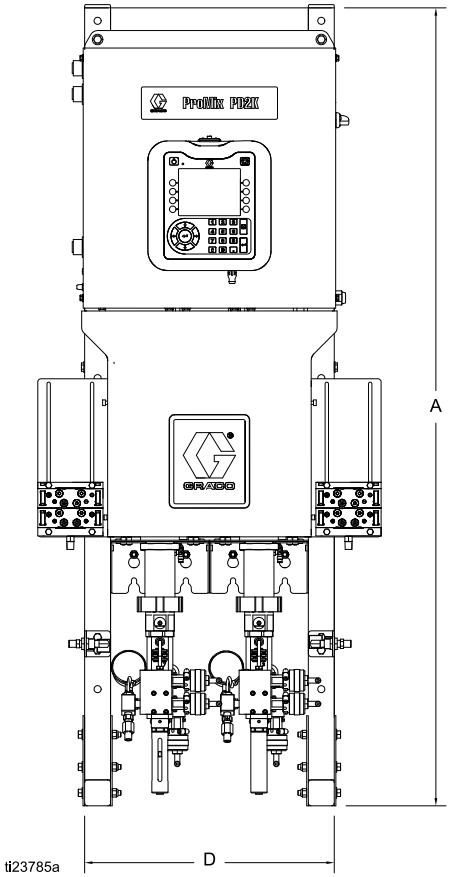

Figure 23

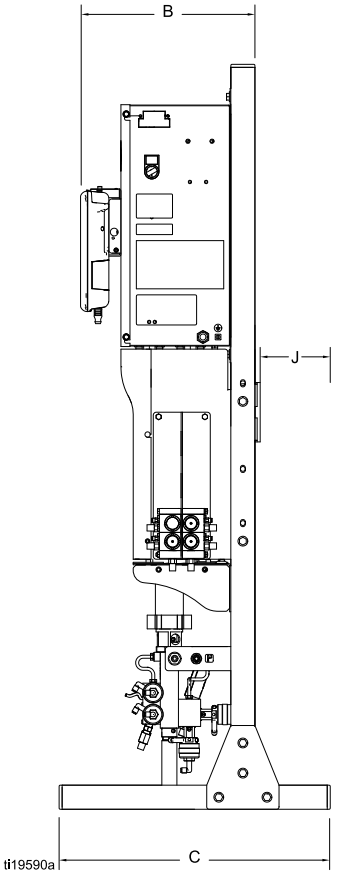

Figure 24

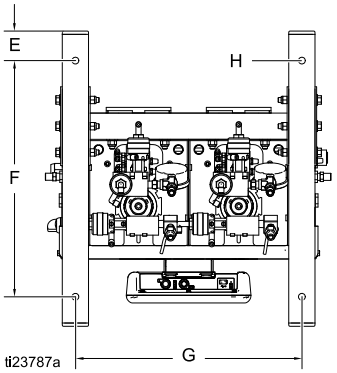

Figure 25

A	B		C	D	E	F	G	H	J
	with ADM	without ADM							
58.20 in. (1478 mm)	14.5 in. (368 mm)	11.12 in. (282 mm)	22.0 in. (559 mm)	19.26 in. (489 mm)	2.0 in. (51 mm)	18.0 in. (457 mm)	17.26 in. (438 mm)	0.52 in. (13 mm)	Minimum 6in (152 mm) from mounting surface

Technical Data

Positive Displacement Proportioner	U.S.	Metric
Maximum fluid working pressure:		
AC1000 Air Spray Systems	300 psi	2.1 MPa, 21 bar
AC2000 Air-Assisted Spray Systems	1500 psi	10.5 MPa, 105 bar
Maximum working air pressure:	100 psi	0.7 MPa, 7.0 bar
Air supply:	85–100 psi	0.6–0.7 MPa, 6.0–7.0 bar)
Air filter inlet size:	3/8 npt(f)	
Air filtration for air logic (user-supplied):	5 micron (minimum) filtration required; clean and dry air	
Air filtration for atomizing air (user-supplied):	30 micron (minimum) filtration required; clean and dry air	
Mixing ratio range:	0.1:1 to 50:1, ±1%	
Fluids handled:	one or two component: • solvent and waterborne paints • polyurethanes • epoxies • acid catalyzed varnishes • moisture sensitive isocyanates	
Viscosity range of fluid:	20–5000 centipoise	
Fluid filtration (user-supplied):	100 mesh minimum	
Maximum fluid flow:	800 cc/minute (depending on material viscosity)	
Fluid outlet size:	1/4 npt(m)	
External power supply requirements:	90 - 250 Vac, 50/60 Hz, 7 amps maximum draw 15 amp maximum circuit breaker required 8 to 14 AWG power supply wire gauge	
Operating temperature range:	36 to 122°F	2 to 50°C
Storage temperature range:	–4 to 158°F	–20 to 70°C
Weight of base model (approximate):	195 lb	88 kg
Sound data:	Less than 75 dB(A)	
Wetted parts:	17–4PH SST, 303 SST, 304 SST, Tungsten carbide (with nickel binder), perfluoroelastomer; PTFE, PPS, UHMWPE	

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

To place an order, contact your Graco Distributor or call to identify the nearest distributor.

Phone: 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.

Original Instructions. This manual contains English. MM 332458

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